CONTRONICS

HUMIDIFIER

HU-25/45/85/245

USER MANUAL

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CE

Contronics Engineering B.V., Ambachtsweg 8, 5492 NJ Sint-Oedenrode,
The Netherlands, hereby declares that products HU-25, HU-45, HU-85 and HU-245 produced and delivered by Contronics Engineering B.V., are in accordance with the following CE directives:

EMC-Directive	: 2004/108/EG
Directive for low-voltage electrical installation	: 2006/95/EG

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1. PREFACE

This user manual contains the operating, installation and maintenance instructions for the ultrasonic humidifier of types HU-25, HU-45, HU-85 and HU-245.

WARNING
It is possible that bacteria could be present in the humidifier's water supply. Some bacteria (Legionella) could be harmful to health if they are present in the aerosols that are blown out by the humidifier.

Through the construction, flushing programme and materials used, Contronics has ensured that the stimulation of bacterial growth is kept to the absolute minimum. In order to ensure the supply of pure water, it is strongly recommended that demineralised water is used (see the Contronics product range). In conditions where bacterial pollution could occur in the surrounding air (e.g. at meat counters) or in areas where hot ambient air could arise (e.g. bakeries), it is also recommended to incorporate an ozone generator in the air supply system (see the Contronics product range). Contronics cannot be held liable for any harm caused by bacteria or micro-organisms. It is the responsibility of the user to regularly carry out maintenance and to check the quality of the supplied water.

IMPORTANT
Although the installation of this product may appear quite simple for experts, the manufacturer urges the installer to carefully read through the instructions before starting to install the device.

2. INTRODUCTION

Principle of ultrasonic air humidification

Minute water droplets with a size of 1 to 3 microns are ejected above the water surface by means of high-frequency vibrations (1.7 MHz). The humidifier's air movement system ensures that these water droplets are then blown into the area to be humidified. The major advantages of this humidifier are the very low energy consumption, the limited amount of maintenance required and the low noise level.

Continuously-variable air humidity control (CVH)

The humidifier has a dial with which the capacity can be regulated between 0 and the maximum per hour. If a humidity sensor has been connected to the humidifier, the desired humidity can be set between 35% and 95% using the same dial. The CVH system will then control the humidity proportional to the set value. The humidifier is therefore continuously in operation and ensures that the relative humidity is maintained at the set value. Instead of controlling the humidity with a humidity sensor, it is also possible to control the humidifier externally (0-10V), for example by using the DZR-45 and HTR-10 controllers.

Capacity

There is no limit to the modular expansion of the HU and this can be carried out as and when needed. This means that an unlimited number of modules can be linked together to form one system, thus allowing the capacity to be increased. As a result of the very high frequency of 1.7 MHz, the water droplets are minute, causing them to evaporate quickly and thereby cause less condensation in the humidifier's distribution pipes on their way towards the area to be humidified.

Water quality

Even though the humidifier itself can be connected to plain tap water up to 8° German hardness, Contronics recommends demineralised water. This will limit the maintenance of the device to a minimum and the service life of the transducer will be considerably extended.

Disinfection

For situations where bacterial purity is necessary (food industry) it is possible to connect an ozone generator. Contronics has an ozone generator in its delivery program.

3. SAFETY REGULATIONS

IMPORTANT
The humidifier has an open water tank. Any overflow of the water tank could damage the electronics inside the humidifier.

The following measures must always be observed:
- **Always disconnect the 230 V mains voltage from the humidifier before moving it and/or carrying out maintenance activities.**
- **Always keep the humidifier horizontal and motionless while it is in operation and for up to 2 minutes afterwards.**
- **Ensure that the water is always discharged via the outlet and ensure that this is never blocked.**
- **The humidifier may only be dismantled by authorized Contronics technicians.**

4. PACKING

The HU is delivered in recyclable packaging that should be kept for re-shipping the unit for maintenance activities. Any shipment using other packaging could cause damage to the HU for which the manufacturer cannot be held liable.

It is possible that some traces of water could be found in the packaging; all the functions of the HU are thoroughly tested during the quality control and, for this reason, some water could still remain in the HU before it is packed.

The package contains:
- HU humidifier.
- Power cord.
- Instructions for use.

5. CONNECTIONS AND FUNCTIONS

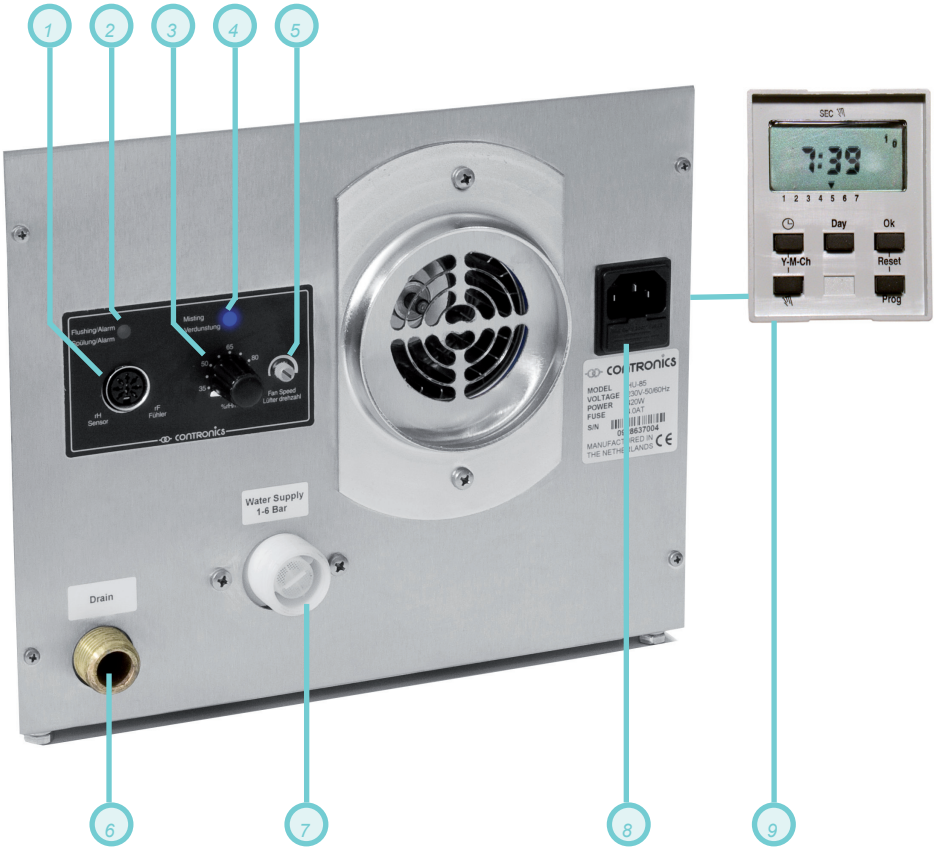


Figure 1 Connections and functions

1 Plug connection for HS-91, DZR-45, HTR-10 or HK-01 (external control 0-10 V).
2. LED for flushing and alarm.
3. Dial for setting the humidity.
4. LED for humidity setting.
5. Dial for setting the airspeed.
6. Water outlet 1/2” free flow-through. (HU-245: 3/4”).
7. Water supply 3/4”, min. 1 bar/max. 6 bar.
8. Mains connection + fuse (230 V± 10%/50-60 Hz).
9. Timer for programming of the ozone generator and humidifier (OG option).

6. INSTALLATION INSTRUCTIONS

IMPORTANT
The guarantee will become void if the humidifier is installed incorrectly or if it is handled in an improper manner.

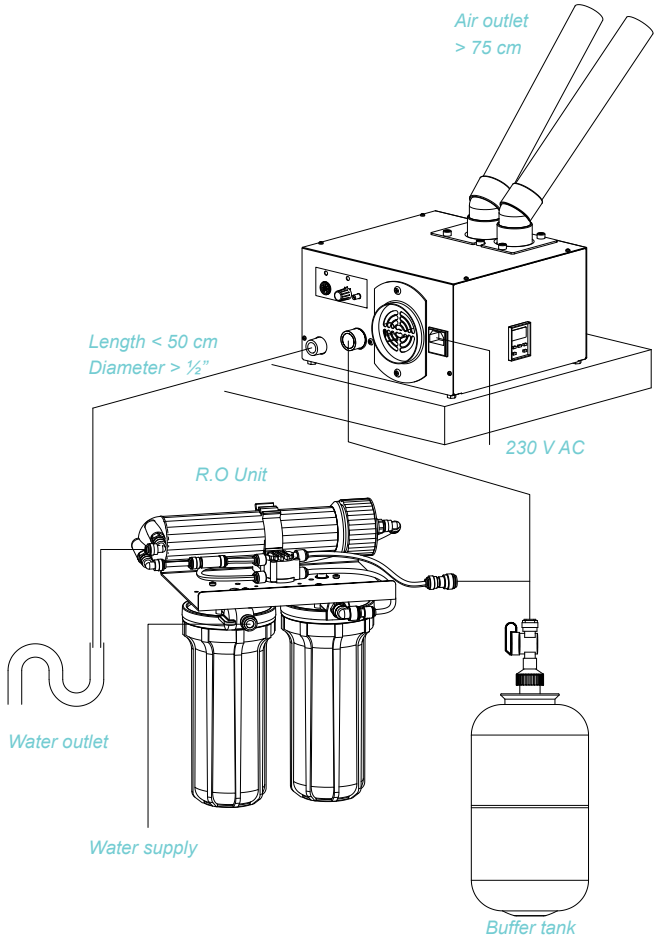


Figure 2 General set-up

1. Place the humidifier in an environment with a temperature between 0°C and 35°C and humidity < 100%.
2. Place the humidifier in a level position (2-dimensional).
3. Never place the humidifier on a closed tray with raised edges.

7. ELECTRICAL CONNECTIONS

Supply voltage (230V AC ± 10%)

Ensure there is an earthed wall socket next to the humidifier. If necessary, connect it in parallel to any external ventilators. This will ensure that the ventilators and the humidifier switch on and off simultaneously.

Sensor connection

Mount the sensor in a suitable place (for measuring) and connect the DIN plug to the humidifier.

External control voltage

The HU can be controlled via an external control voltage (0-10 Volt). Use the HK-01 cable for this purpose. The DIN plug is connected to the humidifier, which can then be controlled using a direct current of 0 Volt (min.) up to 10 Volt (max.).

IMPORTANT
The external control signal must be floating with respect to earth (there must never be a connection to "earth"). Set the capacity dial to 0. The output impedance of the external control signal must be < 470Ω.

The humidifier can also be switched on and off using the same signal and HK-01 cable. If there is a short-circuit between the two cables, the humidifier will switch to stand-by mode and will not continue to humidify. If the contact is opened, the humidifier will immediately start operating again at the capacity set on the dial (Figure 1, Setting 3).

IMPORTANT
If an external controller has been connected to the DIN plug, the dial on the humidifier must be set to 0. This will prevent the humidifier from humidifying if a fault occurs in the controller.

8. WATER CONNECTIONS AND FLUSHING CYCLE

IMPORTANT
Thoroughly flush out the piping before connecting the humidifier in order to prevent installation debris from blocking the intake valve.

Water supply

The humidifier has an integrated flow-reduction valve and can handle a water pressure from a minimum of 1 bar to a maximum of 6 bar. The water level in the humidifier is controlled by a float switch and a solenoid valve.

Demineralised (R.O.) water must be used for the humidifier and will provide adequate protection against bacteria. The use of plain tap water will lead to faster contamination of the water tank and transducerss, which will result in a shorter service life. Moreover, the dissolved calcium and mineral particles in ordinary tap water will be blown into the area to be humidified together with the fog droplets and will be precipitated in the area. Depending on the hardness of the water, this could cause a layer of dust after only a few days (see also the warning on page 4).

Water discharge

Connect a hose with a maximum length of 50 cm and a minimum diameter of 1/2” to the humidifier’s water discharge connection point so that any excess water can be discharged from the humidifier. The outlet of this hose or pipe must be free; the end may not be hanging in the water (see Figure 2). The water discharge from the humidifier is unpressurised.

IMPORTANT
The water discharge connection point on the humidifier must constitute the highest point on the water discharge channel. The water discharge is not pressurised. A blocked outlet could damage the humidifier.

A blocked water discharge channel could cause the humidifier to overflow. For this reason, never place the humidifier on a tray with raised edges as this could cause damage to the humidifier for which the manufacturer cannot be held liable.

Flushing

The standard factory setting for the flushing cycle is once every hour. This may not be suitable for some applications. In these cases, the flushing cycle can be modified to take place once every two hours or set to no flushing cycle at all (consult the manufacturer).

Standard cycle

The humidifier's "flushing/alarm" LED will light up every hour. The device will start the flushing cycle:

- The fogging will stop.
- The water tank will be flushed for approx. 15 seconds (depending on the water pressure).
- The water will be discharged.
- The humidifier will be re-filled and will restart normal operation.
- The green LED will blink while this procedure is taking place.

If the humidifier is switched off (230V supply voltage switched off), the water content will be discharged.

9. AIR CONNECTIONS

Air supply

Ensure a clean air supply without water droplets. Any air supply channel must be free from obstructions.

Air outlet

The air outlet must always be extended by a 75 cm pipe to allow larger droplets to be captured. Mount the outlet so that it slopes towards the humidifier to ensure that any condensed fog can flow back.
The connected pipe must be free from dust, dirt and oil residues. If an outlet opening is blocked, the capacity will be reduced. The length of the air outlet channel to the outlet may not exceed 6m with a diameter that remains the same.

10. SWITCHING ON AND STARTING UP/FUNCTIONAL TEST

Switching on

Check the following before the humidifier is switched on for the first time:

- The humidifier is positioned level.
- All pipes have been properly connected.
- The mains voltage is correct and connected in parallel with any ventilators that are used.
- The water discharge channel has been connected according to the instructions.
- The water supply has been connected according to the instructions. The water piping has been flushed in order to prevent any installation debris blocking the water valve.

IMPORTANT
Never switch the mains voltage on if the humidifier is not in the correct position or if it is placed upside-down, as this would cause the transducers to burn.

Start up and functional test

- Open the water valve
- Set the % RH knob on maximum position
- Switch on the power and check if:
  a. The water runs to the humidifier
  b. The water flow stops after about 60 seconds.
  c. The production of mist starts after a few seconds
- Switch off the power and check if:
  a. The water content is drained away.
  b. After about 1 minute the water reservoir is emptied completely.
- Connect the water drain and check for leakages
- Switch on the main supply again
- Set the % knob in the desired position
- Control if necessary the airspeed with setting 5 (figure 1).

Note: During start up and flushing (water filling) of the humidifier the LED "Flushing/alarm" will blink green.This is a normal indication on the humidifier during this procedure.

IMPORTANT
If the humidifier becomes overheated it will switch off. Once it has cooled down it will automatically switch on again. In case of overheating, the "Flushing/alarm" LED will show red.

The following conditions could cause overheating:

- **A blockage in the air inlet.**
- **A blockage in the air outlet.**
- **Air intake temperature too high.**
- **Water temperature too high.**
- **Water discharge blocked.**
- **Ambient temperature too high.**
- **Ventilator speed set too low.**

11. OZONE GENERATOR (OPTIONAL)

As an option, an ozone generator may be integrated in the HU by the manufacturer. Ozone ensures that any bacteria that are present in the humidifier and the connected piping will be destroyed.

Ozone only takes effect if the humidification is switched off while the ozone generation is taking place. A programmable timer has been incorporated in the side panel of the humidifier for switching the ozone generator and the humidification on and off. Contronics sets the timer to a default setting of 2 hours of ozone generation at night, between 2 a.m. and 4 a.m., while the humidifier is switched off. This setting can be changed (see “Applications”).

WARNING
Ozone could be harmful to your health if the gas is inhaled over a longer period of time in a higher concentration. However, this concentration only occurs inside the humidifier and the connected piping. Once discharged, ozone gas quickly breaks down into ordinary oxygen, without any residual products.

The timer is independent of the mains supply and has a rechargeable battery incorporated in the ozone module for this purpose.

WARNING
If these batteries have to be replaced, the old battery must be disposed off as chemical waste or, alternatively, returned to the manufacturer.

The following information about the ozone generator can be found on www.contronics.nl:
- Programming the timer.
- What is ozone?

12. MAINTENANCE

Regular maintenance is important for the optimum operation of the humidifier and to maintain hygiene.

The maintenance interval of the water reservoir will depend on the quality of the water and the purity of the air that is sucked in. The transducers must be replaced after approximately 20,000 operating hours (i.e. after about 2 years in the case of continuous use).

IMPORTANT
Make sure that the transducers are not damaged during cleaning.

Check the following before starting maintenance or shipping the humidifier:
- The mains plug has been removed from the socket and the ventilator is not moving.
- The water supply has been closed.
- The water supply pipe has been removed.
- The humidity sensor plug has been removed.
- The water reservoir is empty and the water discharge hose has been removed.
- The humidifier remains horizontal while dismantling.

Cleaning
- Remove the connecting flange.
- Clean the reservoir with a soft brush or cloth.

In the case of water scale, the reservoir can be filled with household vinegar. Allow to soak for 4-12 hours then clean with a soft brush and flush through. Remove the filter from the water inlet. Clean the filter or replace it with a new one. Flush the water discharge with water and clean it with a round brush.

13. MAINTENANCE OF THE OZONE GENERATOR (OPTIONAL)

The ceramic element must be cleaned once a year:
- The humidifier must be disconnected from the mains.
- Remove the screws on the side where the timer is located.
- Remove the side panel and disconnect the timer.
- Remove the 2 Phillips screws (bottom and top) from the stainless steel cover plate (on the black aluminium casing).
- Remove the ceramic element from the holder.
- Carefully clean the ceramic element on both sides with cleaning spirit or alcohol.
- If the vapour-deposited metal on the ceramic element is damaged, replace the ceramic element.
- Re-assemble in the reverse order.

14. REPLACING SPARE PARTS

Replacing the transducers

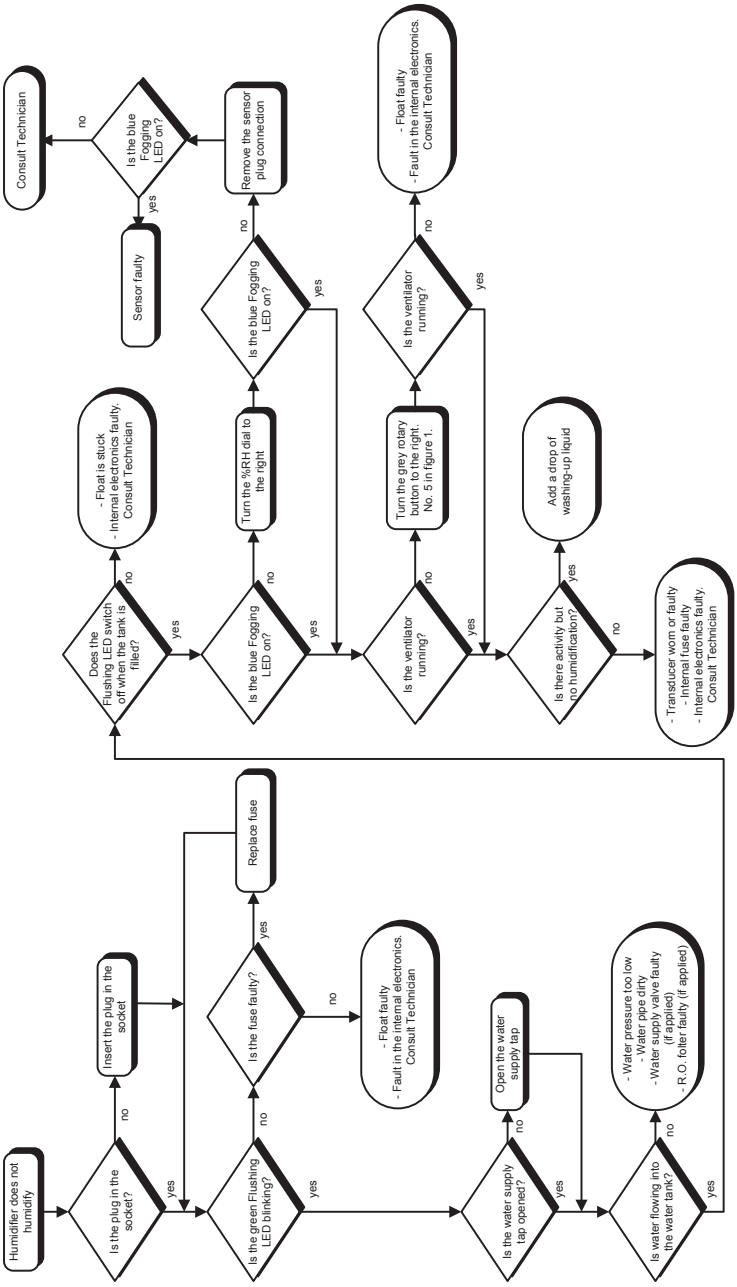
The replacement of the transducers can only be done by Contronics or representatives authorised by Contronics.

IMPORTANT
All maintenance must be carried out by Contronics or by an organisation authorized by Contronics.

15. APPLICATIONS OF THE HUMIDIFIER

Various information sheets and drawings are available covering different applications. These can be downloaded from www.contronics.nl.

16. MALFUNCTIONS



17. TECHNICAL SPECIFICATIONS

	HU-25	HU-45
Transducer frequency	1,7 MHz	1,7 MHz
Maximum capacity	0-1,2 kg/hour (adjustable)	0-3,0 kg/hour (adjustable)
Service life of the transducers	10.000-20.000 hours	10.000 - 20.000 hours
Size of the water droplets	1-3 micron	1-3 micron
Diameter of outlet flange	2 x 40 mm	4 x 40 mm (or 1 x 80 with adapter)
Diameter of suction flange	80 mm	80 mm
Air flow	Adjustable (0-60 m^3 0 Pa)	Adjustable (0-60 m^3 0 Pa)
Outlet pipe length	6 meter	6 meter
Water pressure	1-6 bar	1-6 bar
Water connection	3/4" external	3/4" external
Maximum water hardness	8º German hardness (demineralised water recommended)	8º German hardness (demineralised water recommended)
Flushing frequency	1x per hour (adjustable)	1x per hour (adjustable)
Water discharge	1/2" external	1/2" external
Content of water tank	300 cm^3	650 cm^3
Mains voltage	230V ± 10% 50/60 Hz	230V ± 10% 50/60 Hz
Power consumption	120 W	250 W
Ambient temperature	0 °C till 35 °C	0 °C till 35 °C
Water temperature	5 °C till 15 °C	5 °C till 15 °C
Ambient temperature compared to supply air temperature	Non condensing	Non condensing
Dimensions (LxWxH)	270 x 260 x 160 mm	325 x 265 x 215 mm
Housing	Stainless steel 316L	Stainless steel 316L
Weight	8 kg	11,5 kg

OG (with integrated ozone generator)		
Capacity ozone	0-20 mg/hour (adjustable)	0-20 mg/hour (adjustable)
Controlling ozone	Via timer with day programming	Via timer with day programming

	HU-85	HU-245
Transducer frequency	1,7 MHz	1,7 MHz
Maximum capacity	0-6,0 kg/hour (adjustable)	0-18,0 kg/hour (adjustable)
Service life of the transducers	10.000-20.000 hours	10.000 - 20.000 hours
Size of the water droplets	1-3 micron	1-3 micron
Diameter of outlet flange	2 x 80 mm or 8 x 40 mm	2 x 110 mm
Diameter of suction flange	80 mm	80 mm
Air flow	adjustable (0-60 m^3 0 Pa)	adjustable (0-200 m^3 0 Pa)
Outlet pipe length	6 meter	12 meter
Water pressure	1-6 bar	1-6 bar
Water connection	3/4" external	3/4" external
Maximum water hardness	8° German hardness (demineralised water recommended)	8° German hardness (demineralised water recommended)
Flushing frequency	1x per hour (adjustable)	1x per hour (adjustable)
Water discharge	1/2" external	3/4" external
Content of water tank	1500 cm^3	4000 cm^3
Mains voltage	230V ± 10% 50/60 Hz	230V ± 10% 50/60 Hz
Power consumption	450 W	1,3 KW
Ambient temperature	0 °C till 35 °C	0 °C till 35 °C
Water temperature	5 °C till 15 °C	5 °C till 15 °C
Ambient temperature compared to supply air temperature	Non condensing	Non condensing
Dimensions (LxWxH)	450 x 265 x 290 mm	660 x 425 x 290 mm
Housing	Stainless steel 316L	Stainless steel 316L
Weight	18 kg	43 kg

OG (with integrated ozone generator)		
Capacity ozone	0-20 mg/hour (adjustable)	0-20 mg/hour (adjustable)
Controlling ozone	Via timer with day programming	Via timer with day programming

DISCLAIMER
Contronics works continuously on the further development of its humidifiers. We therefore reserve the right to modify the design, construction and technology of the product at any time. For this reason, no claims can be made based on the data, illustrations and description in this user manual.

Additional, up-to-date information is available on www.contronics.nl.

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